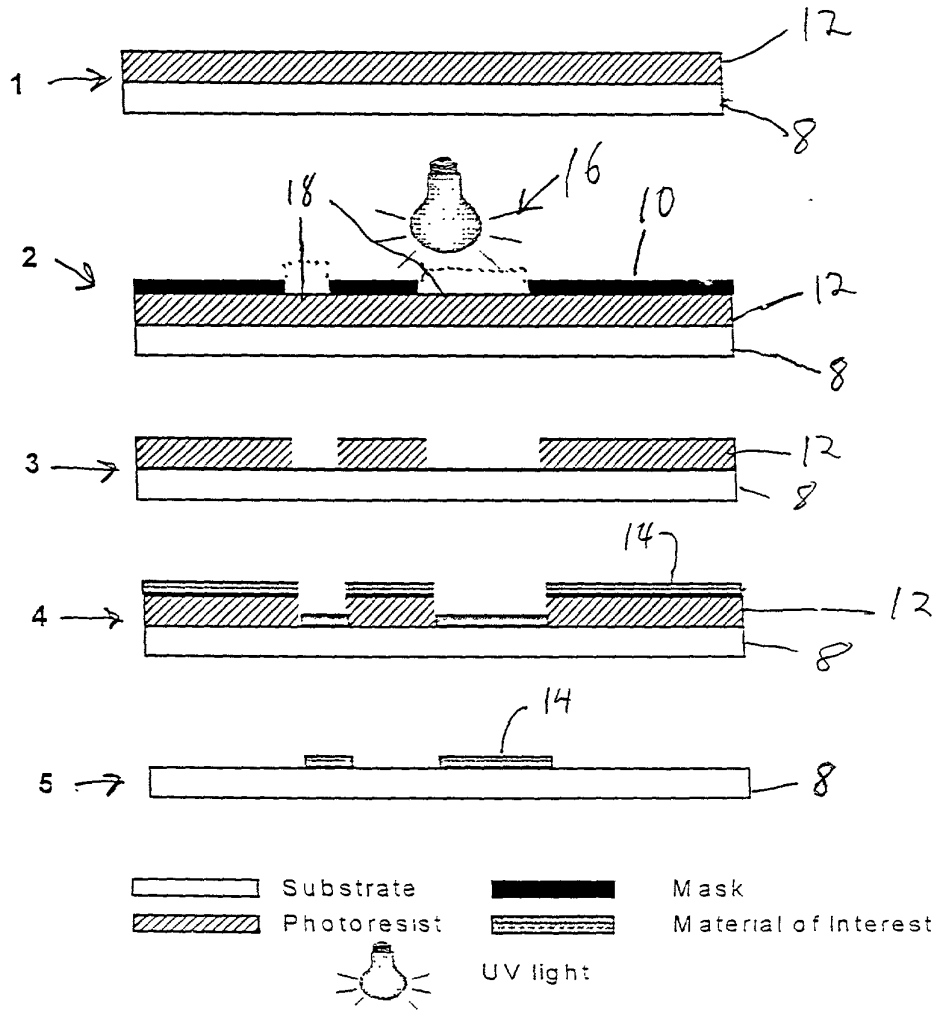

Fig 1

Figure 1.3: Lift-off processing

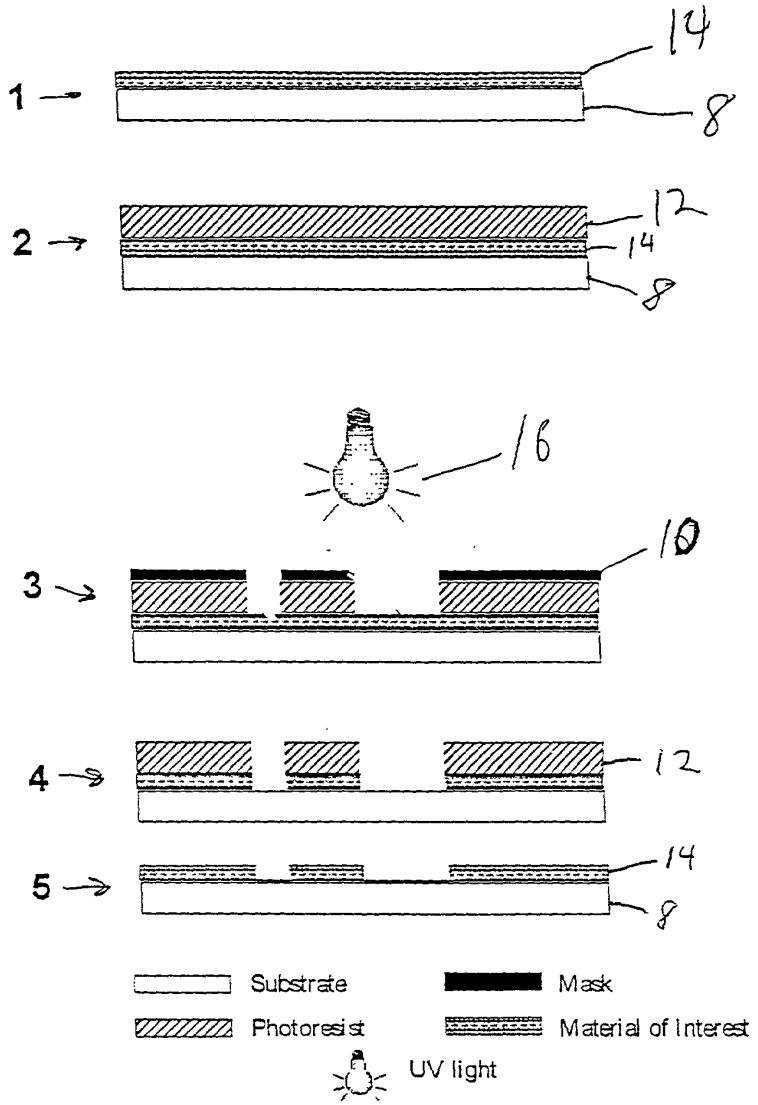

Fig 2

Figure 1.4: Etching procedure

Fig. 3

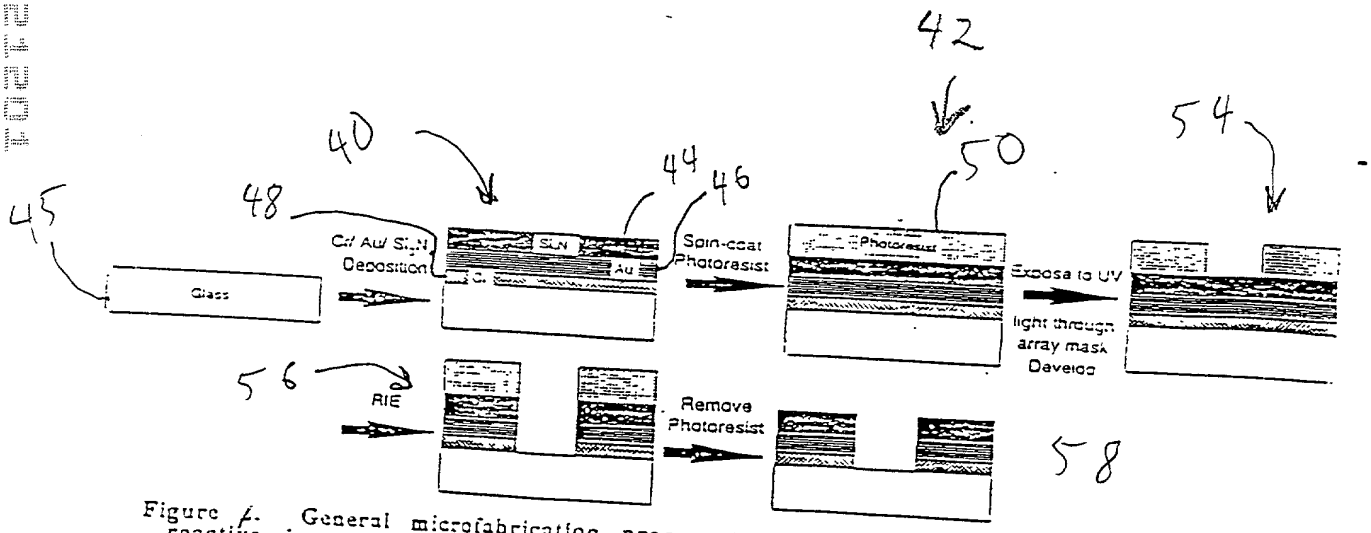

Figure 4. General microfabrication process to construct a device with two layers (RIE = reactive ion etching).

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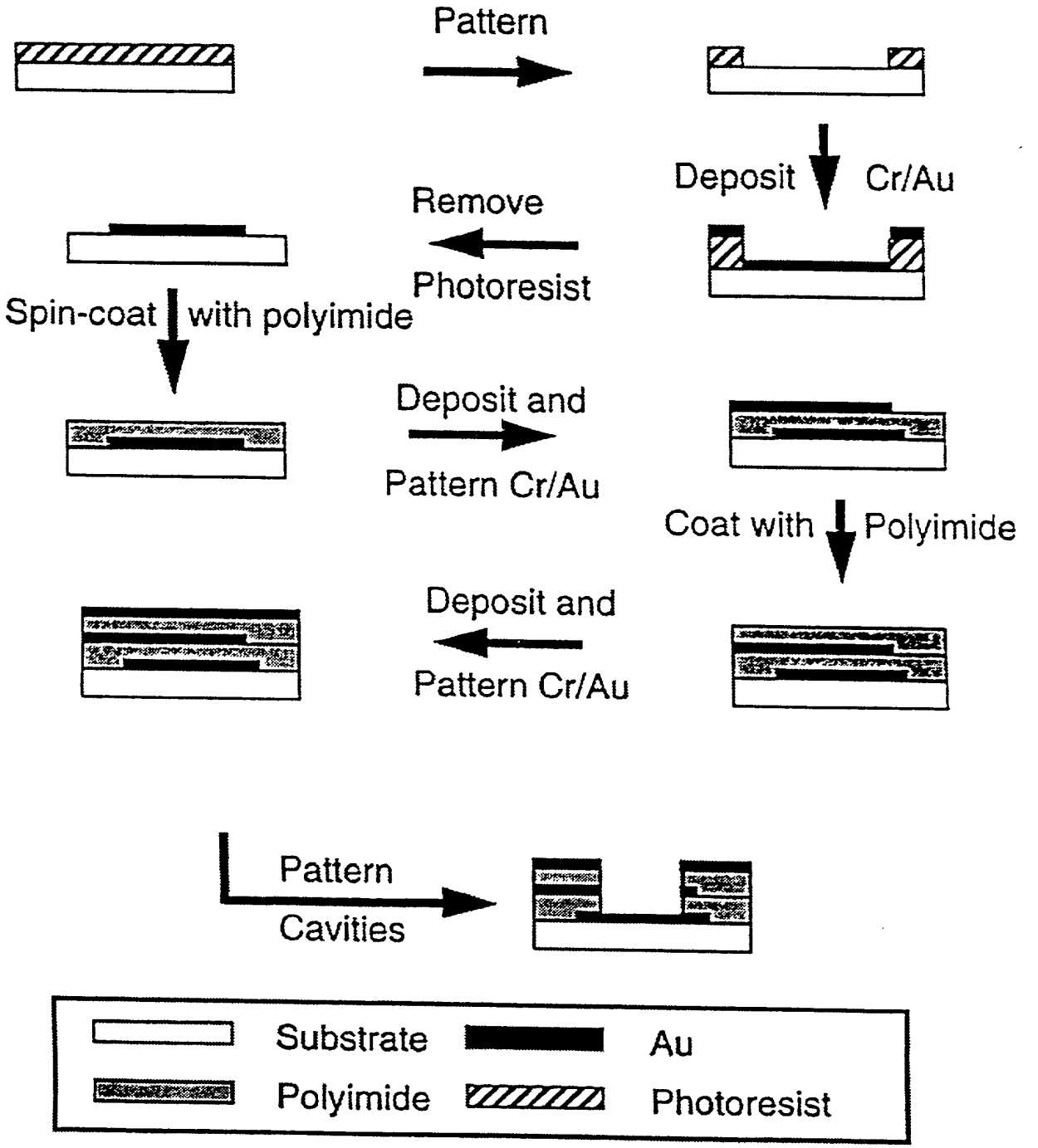


Figure 4. Schematic of the fabrication procedure for the 5-layer microcavity device.

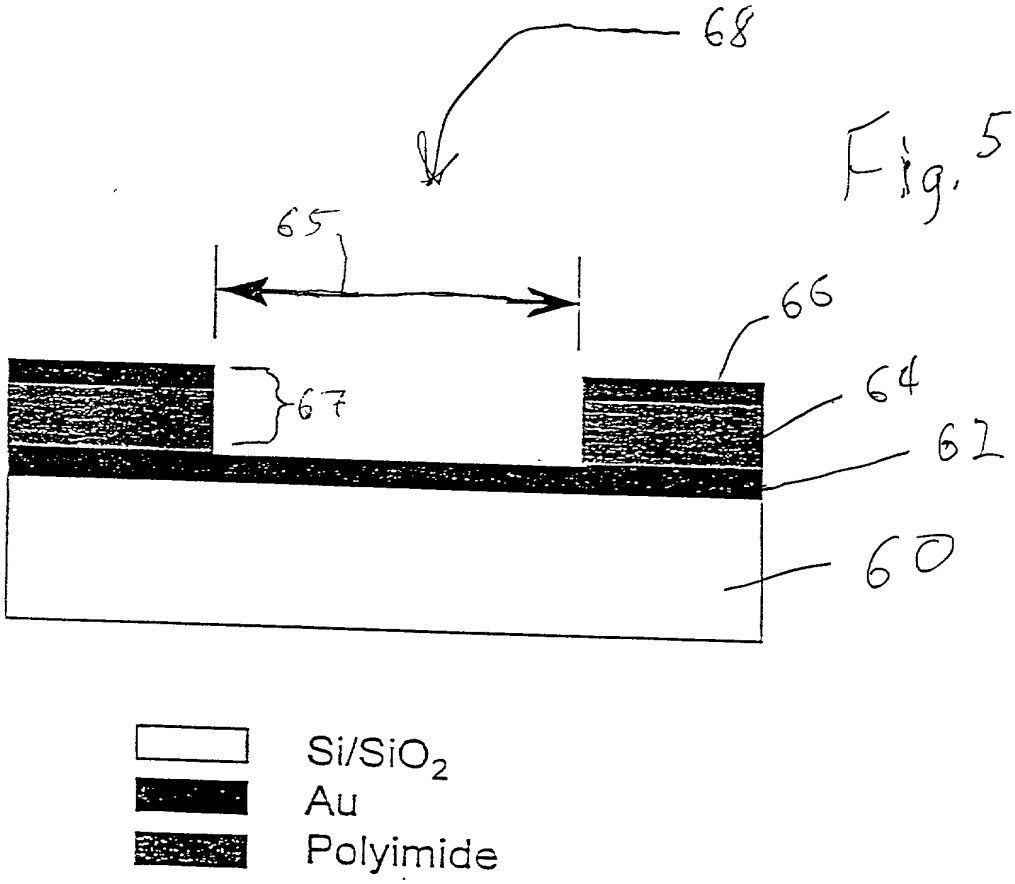


Fig. 5

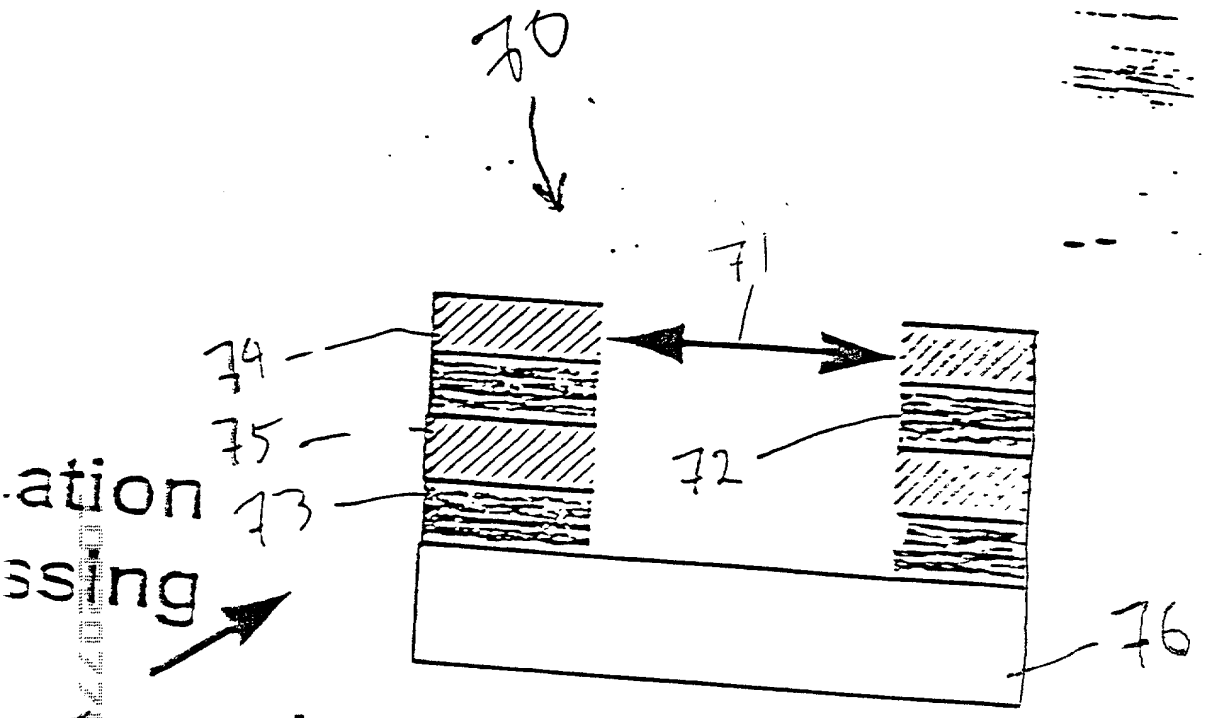


Fig. 6

A Disk and a Band Electrode

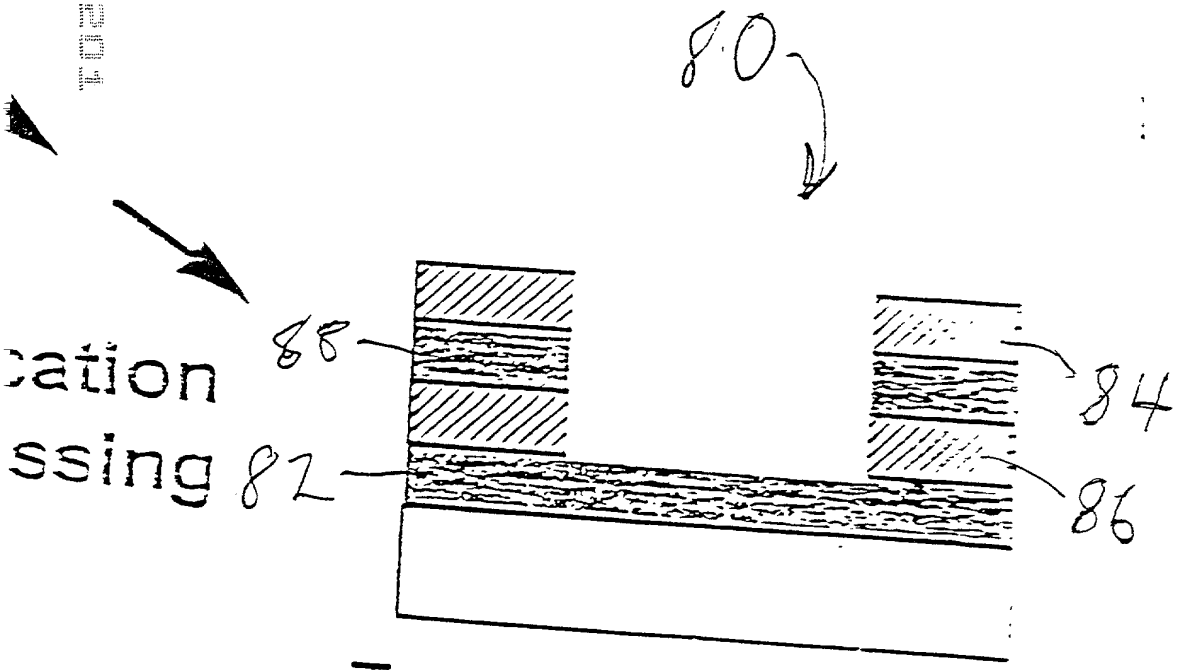


Fig. 7

Two Band Electrodes

$$0.001\ \mu m \leq h \leq 500\ \mu m$$

Figure

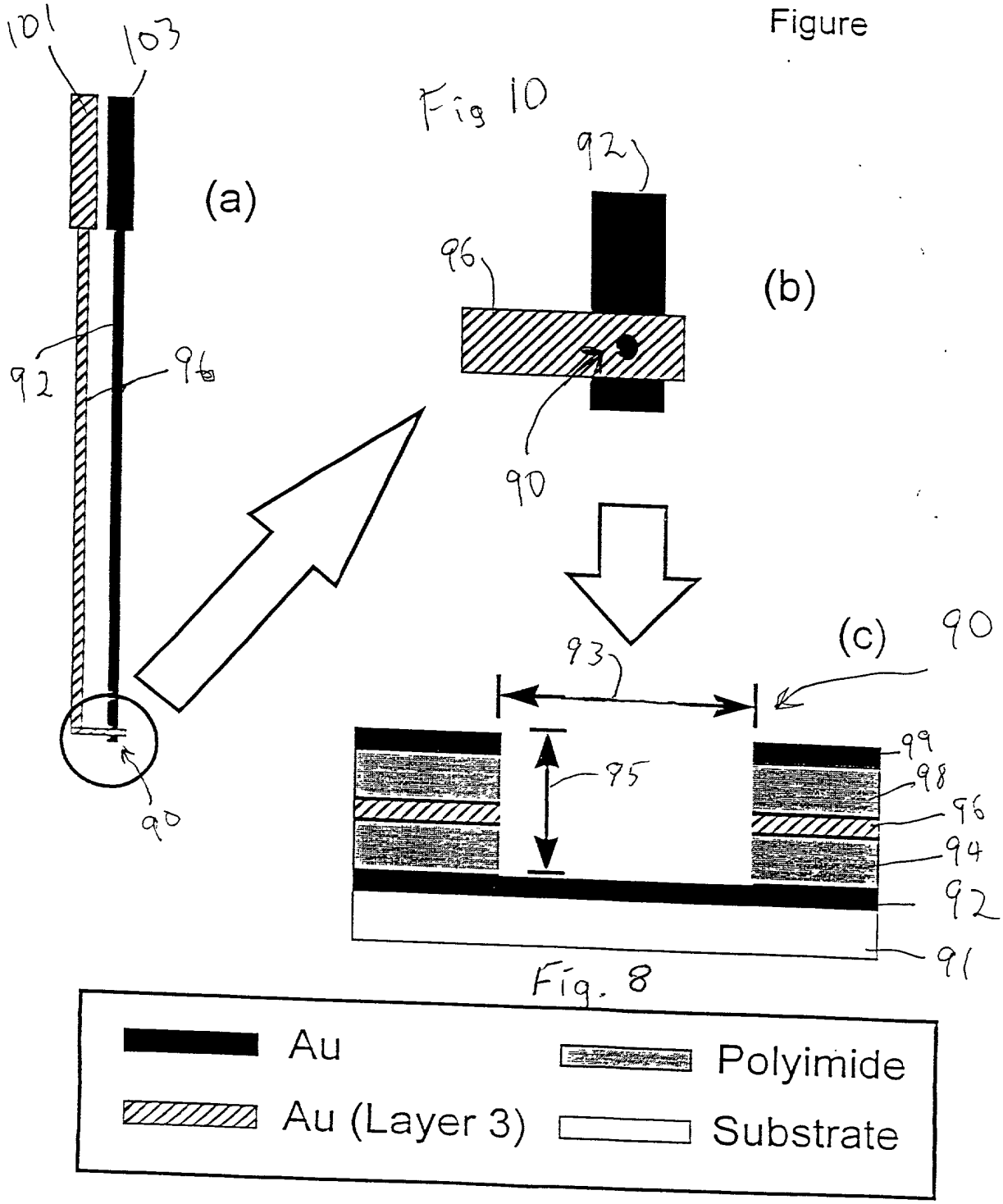
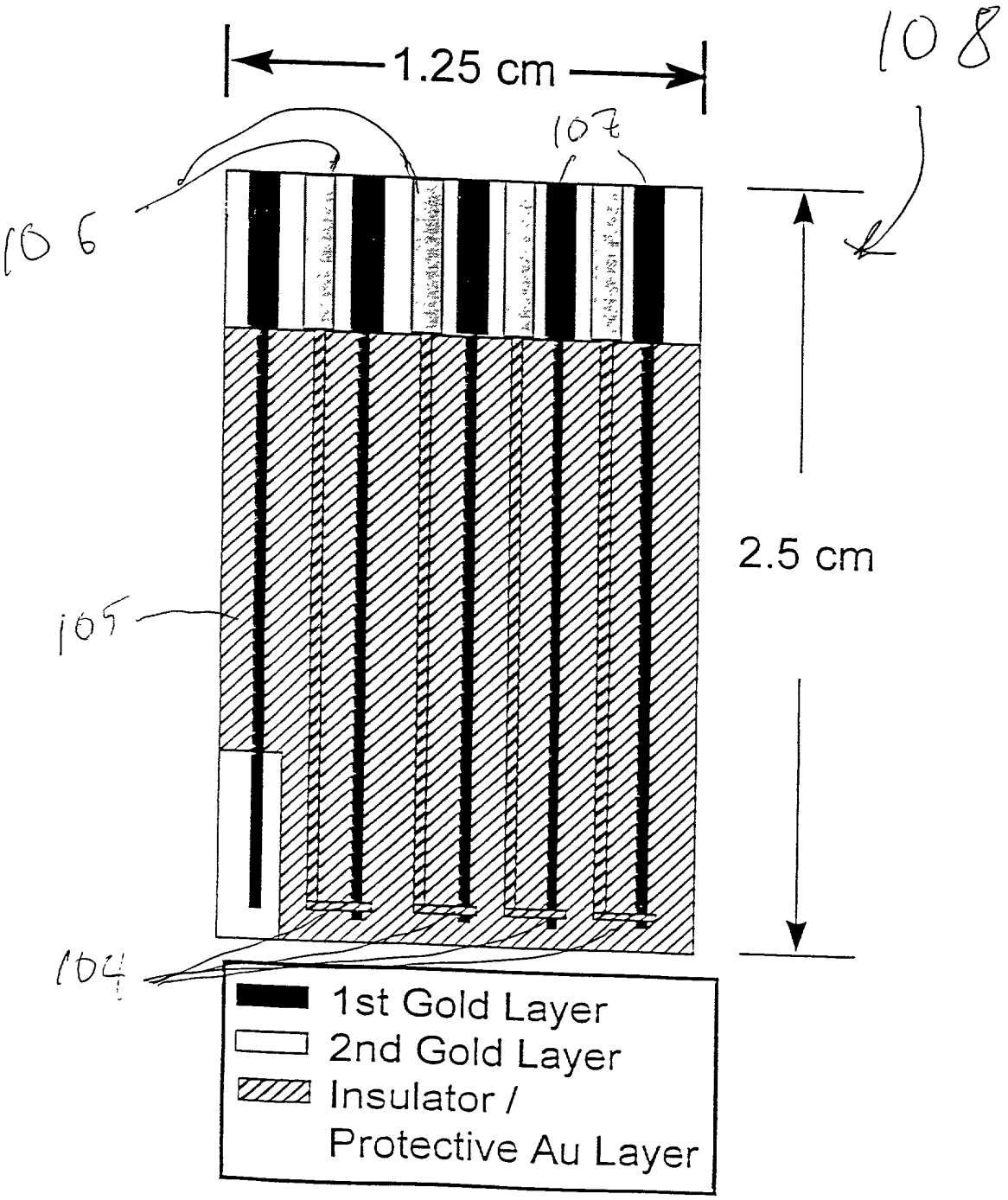
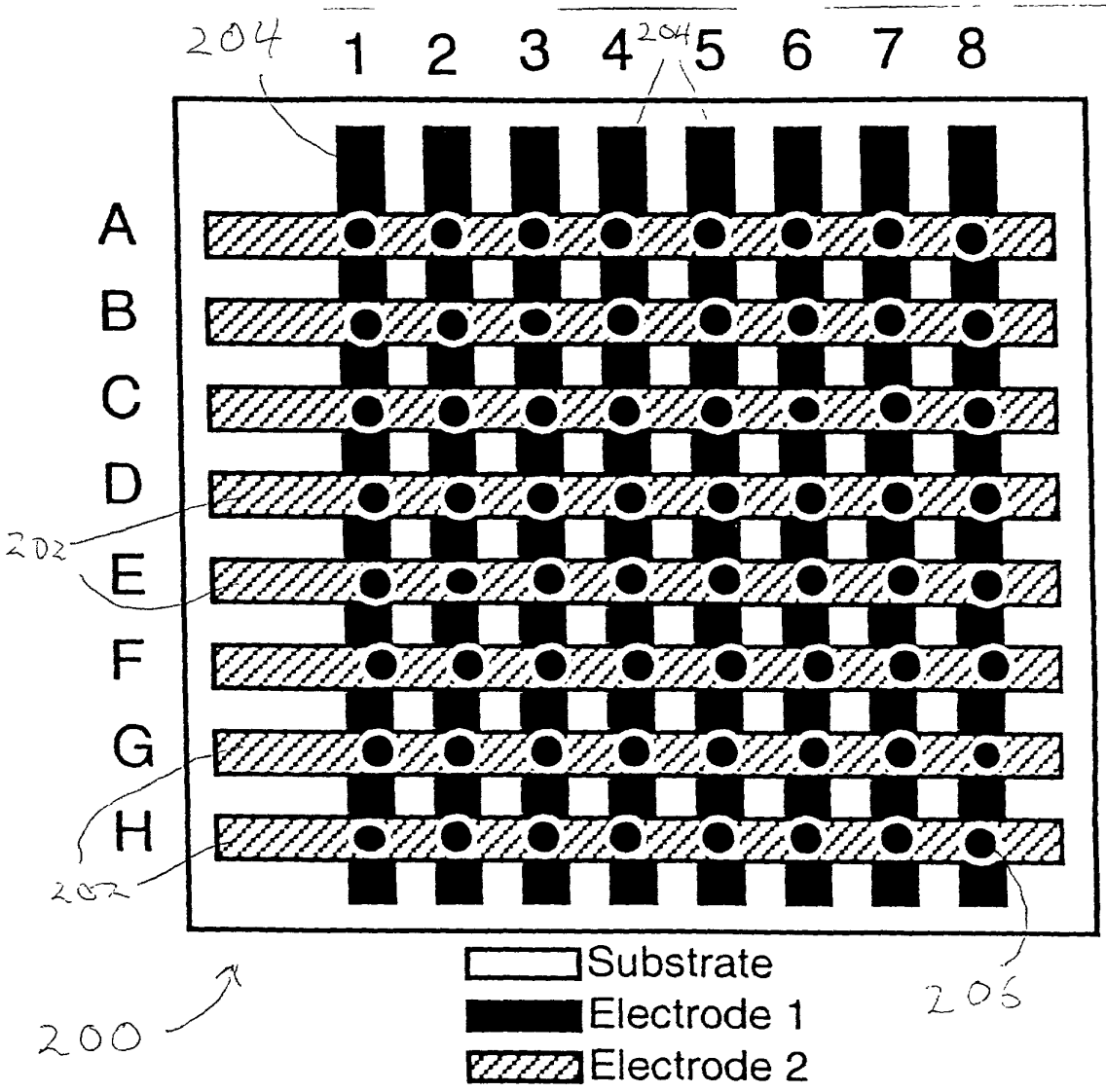


Fig. 8

Fig 9

Fig 11


1.25 cm
108
107
106
2.5 cm
105
104
1st Gold Layer
2nd Gold Layer
Insulator /
Protective Au Layer



8 array for multi-small volume microelectrochemical analysis.

Fig. 12

Fig. 13

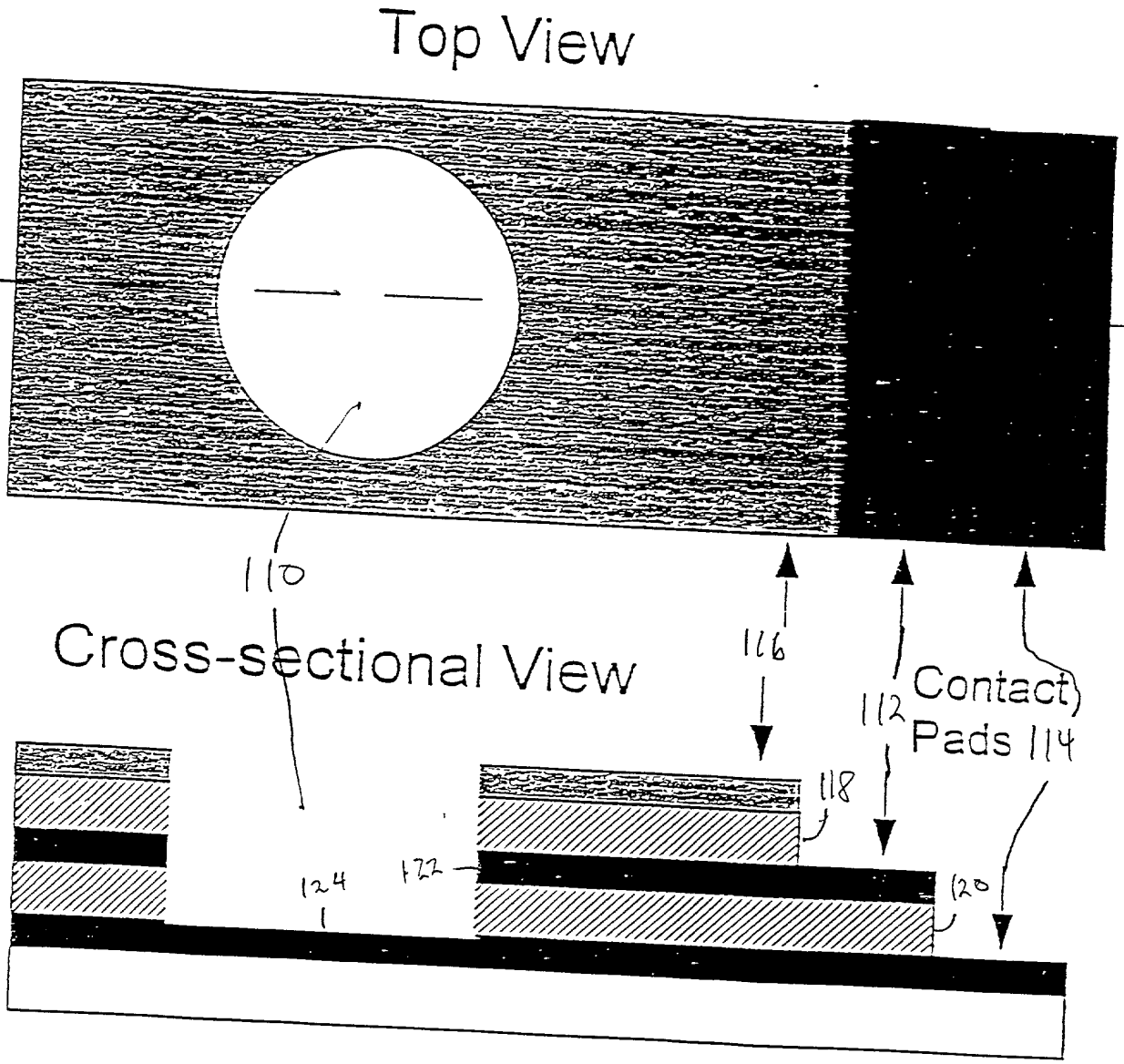

Top View
113
110
Cross-sectional View
116
112
Contact Pads 114
118
124
122
120

Fig. 14

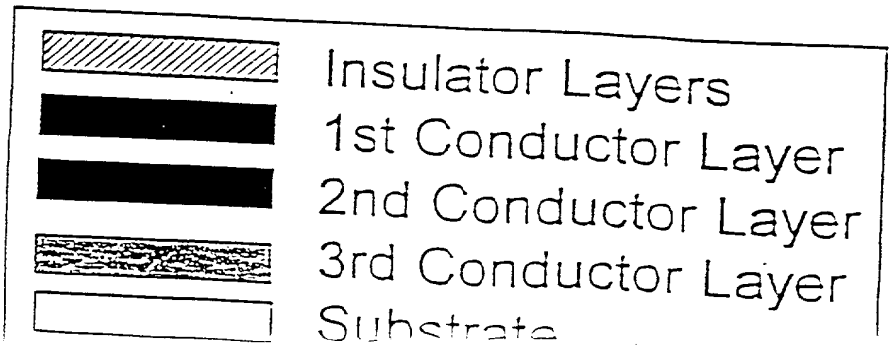
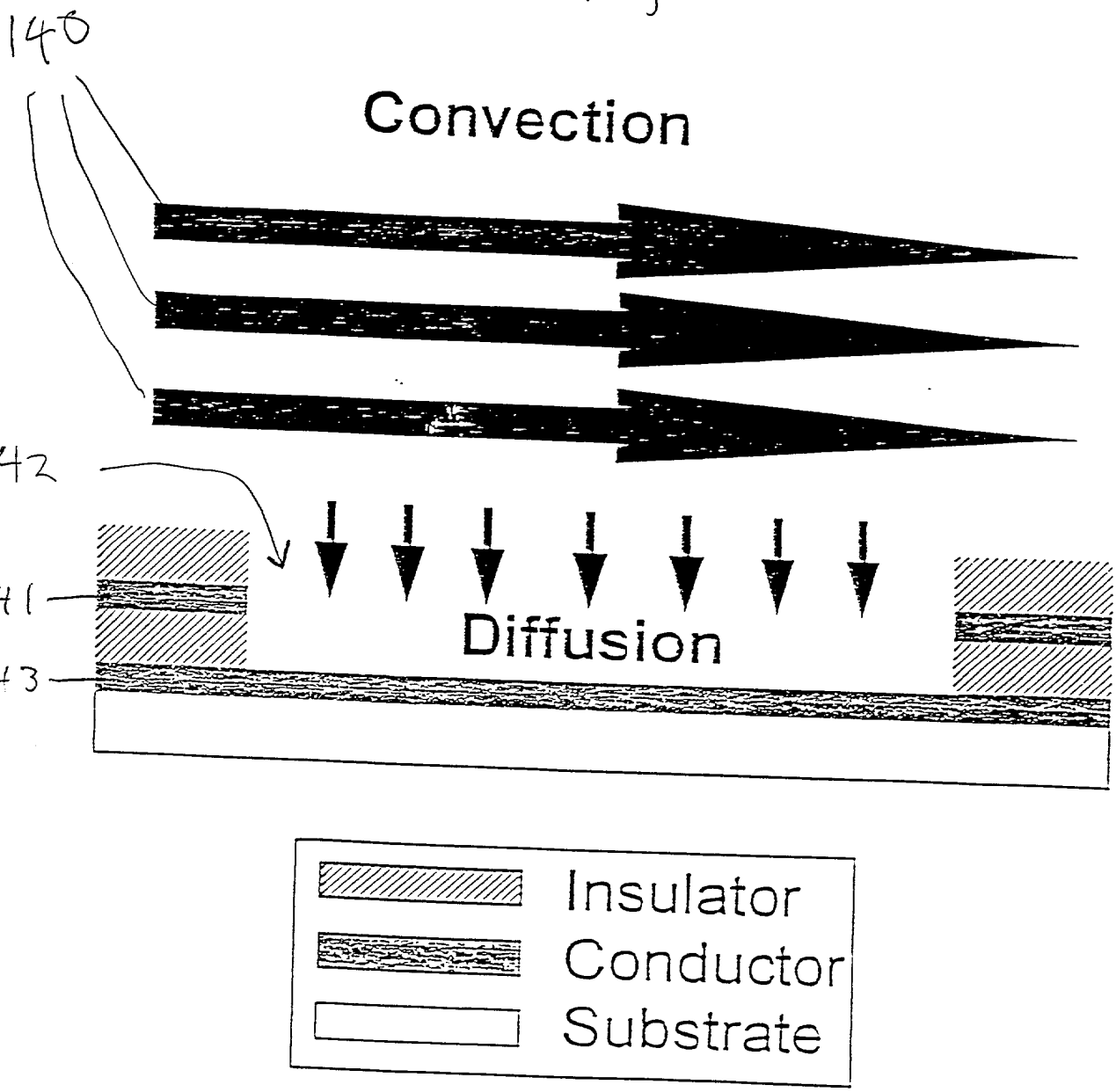

Insulator Layers
1st Conductor Layer
2nd Conductor Layer
3rd Conductor Layer
Substrate

Fig 15


140
Convection
142
141
Diffusion
143
Insulator
Conductor
Substrate

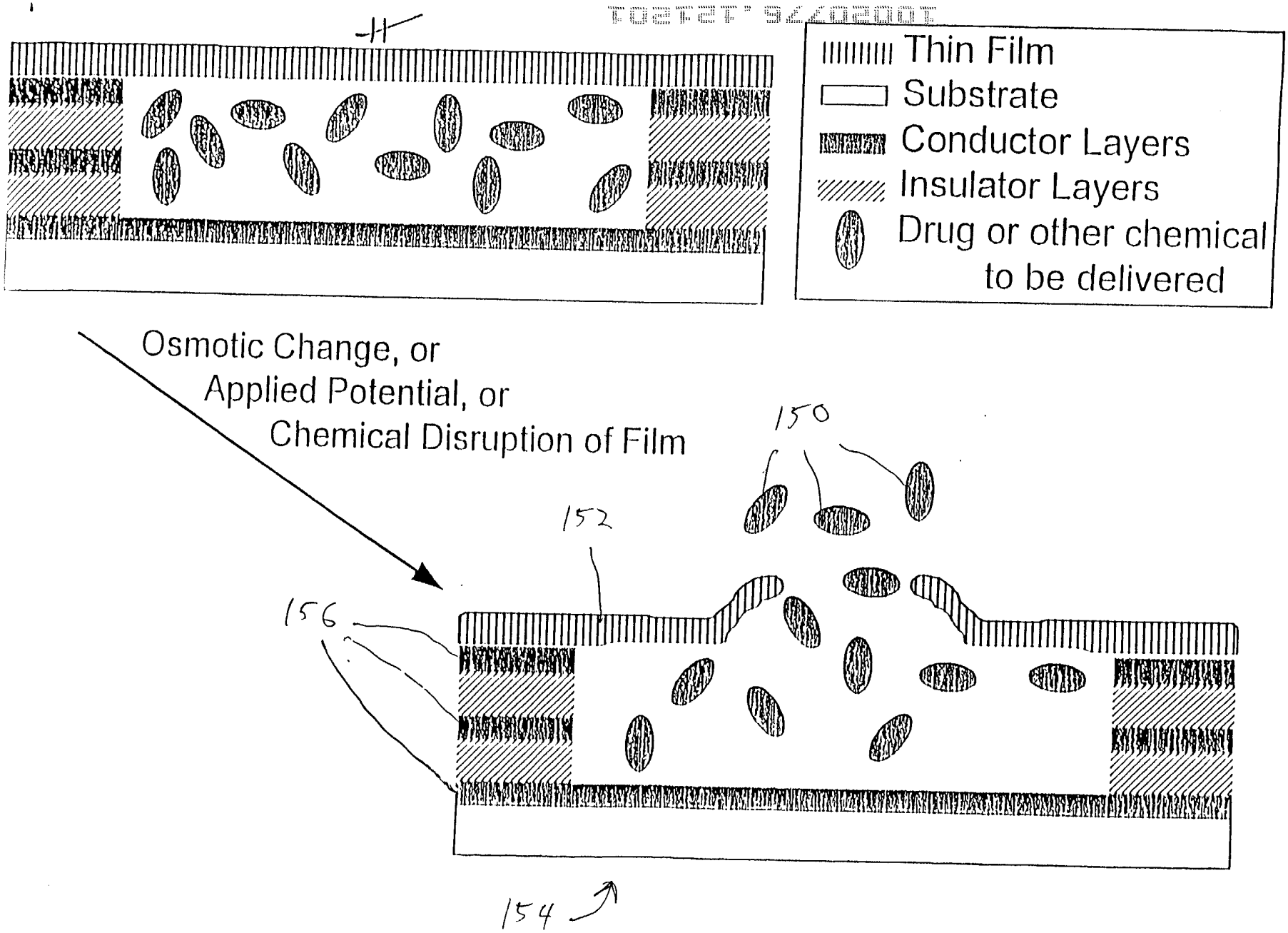

Thin Film
Substrate
Conductor Layers
Insulator Layers
Drug or other chemical to be delivered
Osmotic Change, or
Applied Potential, or
Chemical Disruption of Film
150
152
156
154

Fig. 16

Fig 17 (a)

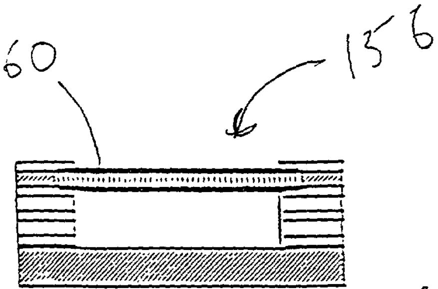
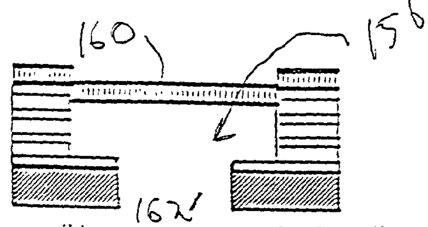
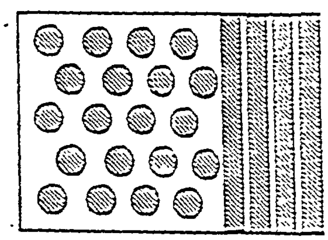


Fig 18 (b)





(c)

. Other possible target structures for three-dimensional microfabricated devices. *On left:* Cross sections with suspended bilayers; Au band electrodes, represented in light gray. (a) Edges of bilayer anchored by alkanethiol-derivatized inner edges of Au layers in an etched region of insulator (white); bottom of well is lined with an insulator layer. (b) Same as Figure 4, but with a hole at its base to minimize osmotic effects (substrate here is Si_3N_4 for this purpose). *On right:* Top view of a multiple-well array. Each circle represents a single cavity (1 μm to 100 μm) over which a bilayer will be assembled. Each contact pad accesses a different level of conductor.

Fig 19

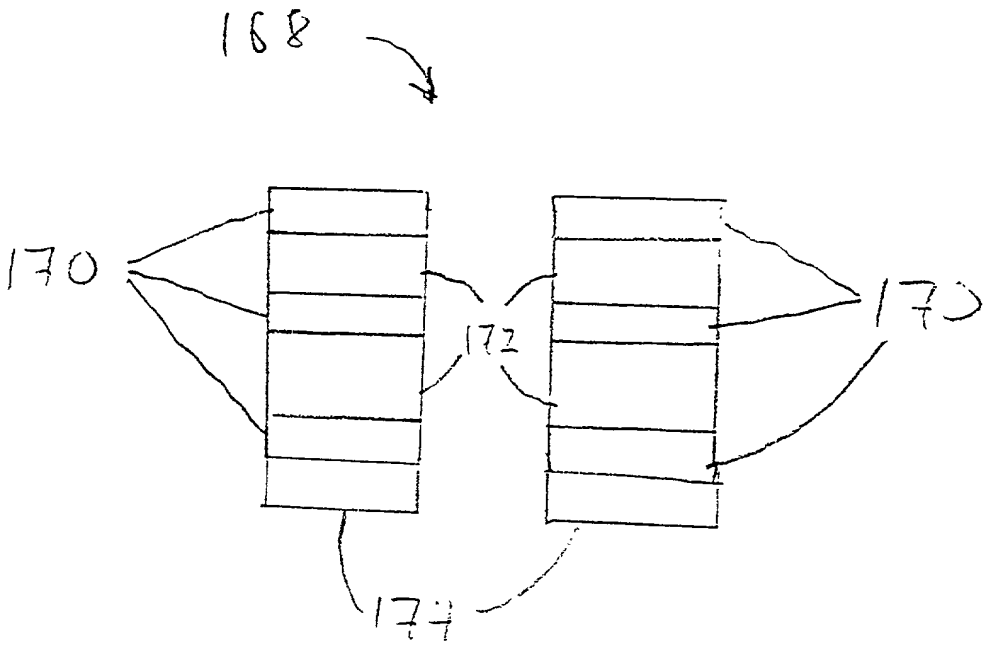
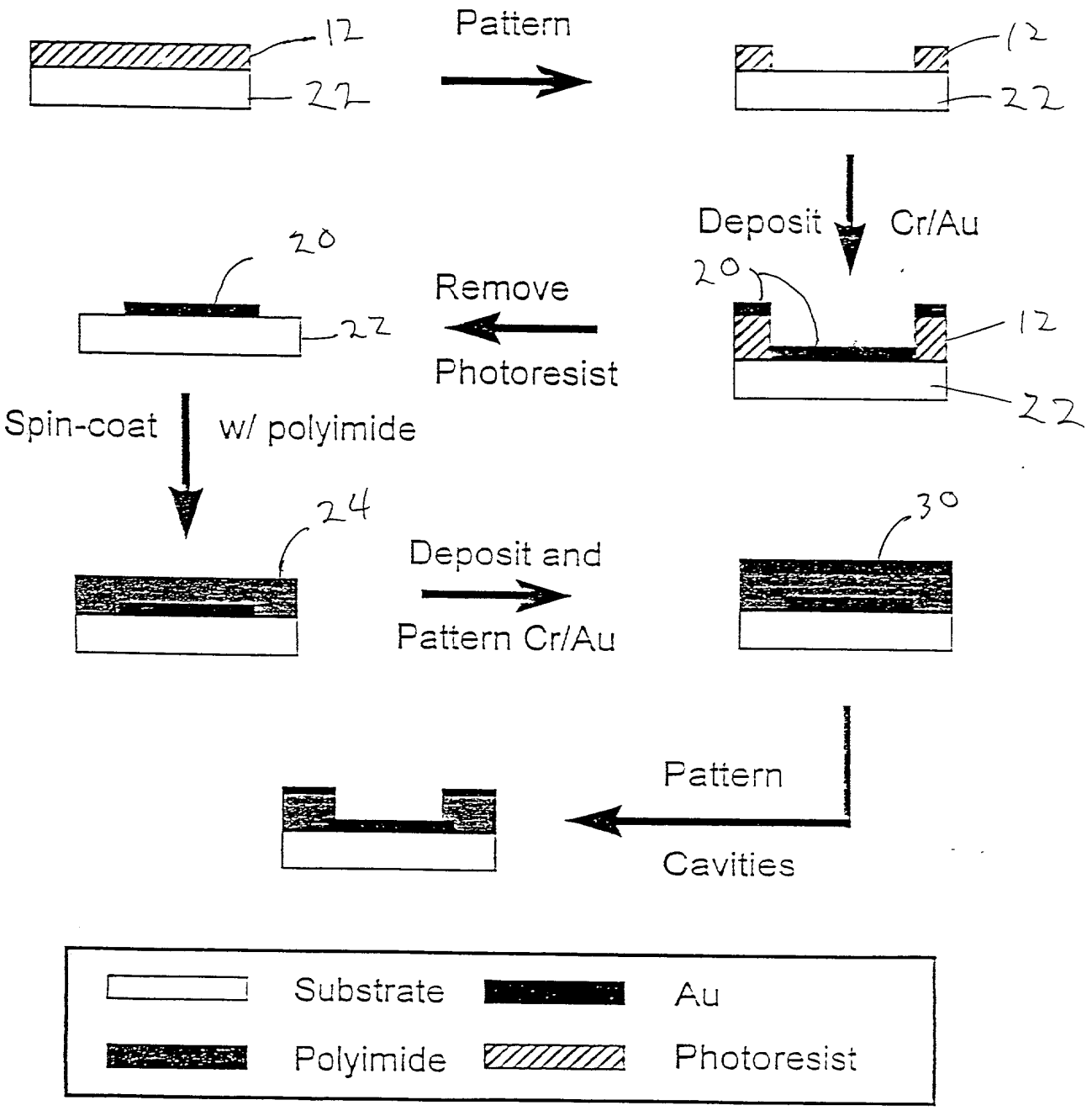


Fig. 20


12
22
Pattern
12
22
Deposit
Cr/Au
20
12
22
20
Remove
Photoresist
22
Spin-coat
w/ polyimide
24
Deposit and
Pattern Cr/Au
30
Pattern
Cavities
Substrate
Au
Polyimide
Photoresist